Monthly Progress Report
Corrective Measures Study (CMS) for Potential Release Site (PRS) 16-021(c)
March 2000

This report summarizes Los Alamos National Laboratory (LANL) activities that were completed during March of fiscal year (FY) 2000 on the CMS for PRS 16-021(c), the 260 outfall. Both the activities described in the CMS plan ([LA-UR-98-3918)], which was submitted to the New Mexico Environment Department-Hazardous and Radioactive Materials Bureau [NMED-HRMB] on 9/30/98, and approved by NMED-HRMB on 9/8/99), and other related activities are described herein.

Description of Activities and Contacts

High Performing Team (HPT) Activities – The 260 HPT met on March 6, 2000. The HPT performance matrix was reviewed and finalized. LANL representatives provided highlights of the ongoing data collection activities. The residence time, spring and seep dynamics, alluvial water dynamics, alluvial sediment dynamics and ongoing Phase II activities were reviewed. The recent stable isotope results provided important insights into the connectivity of the surface water and the alluvial water in Cañon de Valle. The two units appear to have a low degree of connectivity. Several minor deviations from the approved RFI Report and CMS Plan were noted. These included: 1) inability to collect water samples in several dry wells; 2) a delay on submission of nitrogen isotope samples pending availability of analyses of $\delta^{18}O$ on nitrate; 3) elimination of daily pH measurements in the springs and alluvial wells with the dataloggers because the data quality is poor; and 4) a set of high-flow samples were not collected in Cañon de Valle in 1999 due to a lack of precipitation. Several potential future deviations to the approved sampling were also discussed. These will be revisited at a future HPT meeting. HRMB representatives indicated that they would attempt to utilize the approval of the IM Plan as a means of approving many of the individual activities that might normally require separate notifications. Further discussions of the IM Plan will occur during the coming weeks. The HPT also discussed presentations that will be made by the team: one at the ER Monthly meeting on March 22, 2000 and the other at the ER Colloquium on April 6, 2000. LANL representatives will take the lead on preparing for these presentations. The next HPT meeting will be April 3, 2000.

RCRA Facility Investigation (RFI) Report and CMS Plan– No new activities occurred during March 2000.

Best Management Practices (BMPs)–BMPs were inspected weekly during March. The BMPs were in good condition. Several of the older BMPs, such as the diversion piping and some of the straw bale dams, were removed as a part of the preparations for the Interim Measure (IM). A new BMP, a plastic-lined zero-discharge holding area and dam, was constructed to support the IM within the outfall just upstream from the cliff. All of these BMPs, including straw bales and diversion dams, have been designed to minimize run-on and runoff from the contaminated outfall area.

***CMS Hydrogeologic Investigations*–**CMS hydrogeologic investigations include ongoing Phase II RFI sampling as well as continuing investigations outlined in the CMS plan.

The ongoing Phase II RFI sampling included sampling the Sanitary Wastewater System Consolidation (SWSC) Spring, Burning Ground Spring, and Martin Spring every other day for bromide, other anions, and stable isotopes. The analyses from the March sampling are in process. No new bromide breakthrough has been observed in samples to date. The flow in SWSC spring is at a very low level. Flow integrated samples were collected and submitted for laboratory analysis.

The wells, both alluvial and deep, were checked weekly for water level and presence of water. Four of the five alluvial wells contained water; the exception was still alluvial well 2655, which is located in the steam plant drainage. None of the intermediate-depth boreholes contained water.

In March, two samples from precipitation events were collected.

The quarterly sampling of TA-16 springs, the alluvial system, alluvial wells, and other TA-16 water sources was completed. The following locations were not sampled, due to a lack of water: 1) the confluence of Cañon De Valle and Water Canyon and 2) the confluence of Fish Ladder canyon and Cañon de Valle. Perchlorate was added to the analyte suite in the springs and alluvial wells.

At CdV-R-15-3, air rotary drilling began on March 17, 2000. Drilling was with a 16 in. tricone bit and proceeded open-hole using foam, as necessary to maintain borehole stability. Perched water was encountered on March 22 at a depth of 611 ft.. A water sample was collected, field screened for RDX, and submitted under 5-day turnaround for laboratory analysis. An apparent false positive result was obtained with the D-Tech RDX kit. Unvalidated laboratory data results suggest little or no HE was present in the water. This water was ephemeral, it did not recharge on March 25, 1999, during geophysical investigations in the open hole. These geophysical investigations included a natural gamma log and borehole video log. The borehole was cased, using a 13 in. casing, to a depth of ~ 720 ft.

Drilling continued, open hole, using a 12.25 in. diameter tricone bit. As of March 31, 2000 the total depth of the borehole was ~ 1100 ft.

Major geological contacts intersected include: the Tshirege member/Cerro Toledo contact at ~ 365 ft; the Cerro Toledo/Otowi contact at ~ 575 ft; the Otowi/Guaje pumice contact at ~ 770 ft; and the Guaje pumice/Puye formation contact at ~ 800 ft. A thin lens of Cerros del Rio basalts within the Puye formation was intersected at ~ 980 ft. These contacts are preliminary and their location will be refined based on geophysical logs and on detailed study of the drill cuttings.

A tour of the rig site was provided to HRMB personnel on March 24, 2000. HRMB personnel expressed a preference for open-hole drilling, followed by detailed geophysical logs, rather than coring. Based on this discussion, little or no coring will be performed in this borehole.

Ecological Risk Pilot– A preliminary report documenting the revised ecological screening was provided to the HEPS Team by the ecorisk subcontractor. The ecorisk high-performing team met and discussed 260 outfall issues.

CMS Bench and Pilot Studies–Bench and pilot studies continued in collaboration with the Innovative Treatment Remediation Demonstration (ITRD) Program. The ITRD HE program is focused on two DOE sites: LANL and Pantex. Five studies are now ongoing under the auspices of ITRD, all of which may benefit the PRS 16-021(c) CMS:

1. A study of the passive barrier technology of Stormwater Management, Inc.
2. A study of chemical treatment of HE-contaminated soil using zero-valent iron (ZVI).
3. A study of in situ anaerobic bioremediation of HE at Pantex using gas-phase carbon additions.
4. A study of ex situ anaerobic bioremediation of Pantex soils using the W. R. Grace process.
5. A study of HE composting.

No new results were received on the first through fourth studies.

Regarding the fifth study, due to the equivocal results from the ZVI pilot test for HMX, LANL and ITRD personnel have decided to implement a series of tests of HE composting as a replacement for the ZVI process. A series of tests of HE composting was begun at TA-16 during March 2000. These are being completed with clean soil and various mixtures of stable waste, cow manure, yard waste, potato waste, etc. to optimize an HE compost mix for northern New Mexico

Interim Measure **(IM)** – Site preparation activities were continued during the first half of the month. These activities included: clearing trees for staging areas, collecting waste screening samples to delineate areas requiring blending and potential barium 'hot spots', and building wood berms around the staging areas. The zero-discharge BMP was constructed the weekend of March 4, 2000.

Following a tour and approval of the zero discharge BMP by Surface Water Bureau personnel on March 17, 2000, excavation of the lower part of the upper drainage was begun. NMED personnel were notified that this excavation would occur during a phone conversation on March 17, 2000. All of this material contains relatively low levels of hazardous constituents and would not be classified as hazardous waste upon generation. This material was segregated into fine material (soil) and oversized material (rock) using a screening plant, and was staged adjacent to the drainage. By March 31, 2000 a total of ~

90 cu. yds. of soil and ~ 40 cu. yds. of oversized material had been processed. A tour for HRMB and DOE personnel was held on March 24, 2000.

Excavation of material that could potentially be classified as hazardous waste is pending approval of the Area of Contamination (AOC) by NMED. A letter clarifying LANL's position on this AOC was submitted on March 29, 2000.

Public and Stakeholder Involvement– There were no public or stakeholder involvement activities during March 2000.

Percentage of CMS Completed

LANL estimates that 55% of the CMS has been completed to date. Note that this percentage does not reflect the deep wells that will be drilled per the CMS plan addendum.

Problems Encountered/Actions to Rectify Problems

CMS Hydrogeologic Investigations

Problem (1) The lack of a completed well at R-25 remains a concern to the TA-16-260 team.

Action to Rectify Problem (1): The screens have been installed and the well has been purged. The well is now being readied for Westbay installation.

CMS Bench and Pilot Studies

Problem (1) The ZVI pilot test did not work effectively for HMX. The additional ZVI added during November did not significantly improve breakdown for HMX.

Action(s) to Rectify Problem (1). Composting is being investigated in place of ZVI.

IM

Problem (1) Several regulatory issues still need to be resolved prior to final implementation of the IM.

Problem(2) Delays at MDA-P will delay availability of the remote excavator. This will delay portions of the IM.

Action(s) to Rectify Problem (1) LANL is meeting frequently with NMED representatives to solve these regulatory issues.

Action(s) to Rectify Problem (2) LANL will wait until the remote excavator is available.

Key Personnel Issues

None.

Projected Work for April 2000

RFI Report and CMS Plan

- No work is scheduled for this month.

BMPs

- Inspection of existing BMPs following significant precipitation events will continue.

CMS Hydrogeologic Investigations

- Continued bromide sampling of springs.
- Weekly checking of water levels and presence of water in alluvial and deep wells.
- Sampling of flow-integrated ISCO samplers.
- Continued precipitation monitoring and sampling for stable isotopes.
- Data analysis
- Drilling of CdV-R-15-3 to the maximum depths possible with the current rig (est. 1300 ft).

Ecological Risk Pilot

- The ecorisk HPT will meet and continue to discuss 260 outfall issues. A tour for that team is scheduled for April 21, 2000.

CMS Bench and Pilot Studies

- Modification of Stormwater Management pilot design.
- Continuation of composting tests on HE-bearing materials.
- Initiation of study designs for stabilization and phytoremediation.

IM

- Soil removals and soil staging of low-level HE soils from lower and upper drainages including material that is potentially hazardous waste, once generated.

Public and Stakeholder Involvement

- The TA-16-260 HPT will brief the ER Colloquium on April 6, 2000. There will be a general ER availability session on April 19, 2000.